

# Microneedling

## - a revolutionary approach



**Moira Wilson,**

Physiotherapist in private practice at Netcare Milpark Burns and Trauma Unit; allied health representative, South African Burns Society

**Microneedling is a safe, simple, effective dermal technique used in the treatment of various scars, and antiageing. There is stimulation of the skins natural ability to repair both the effects of ageing skin and skin that has been damaged by scarring or donor sites in burns. It is a controlled skin injury without injuring the epidermis.**

**T**HE GOAL OF microneedling is the percutaneous induction of collagen by inducing a reset or reboot at cellular level. It sets up a wound-healing cascade with the release of growth factors. There is cross-talk between the epidermis, dermis and dermal/epidermal junction and as such microneedling has an effect on these three different layers. This technique leads to reorganisation of old collagen fibres with a significant increase in the production of collagen and elastin. Histological analysis of skin after a few sessions of needling has demonstrated up to 400% increase in collagen and elastin.

Needling creates thousands of controlled injuries in the skin causing micro channels to trigger the body's natural wound healing process resulting in formation of collagen and remodelling, which supports underlying tissues. These channels close in a few hours from induction. Microneedling breaks old collagen strands in the superior layer of the dermis. As far back as 1995 medical dermal needling has been carried out for scars Orentlich *et al*, followed by a paper from Fernandes *et al* and Aust *et al*.

Microneedling involves pricking the skin hundreds of times down to the level of the dermis. There are various devices on the market which are used for medical needling such as dermarollers, dermapens and dermastamps. A derma roller is a drum shaped roller, which has 192 needles, and the diameter of the needles are from 0.07mm to 0.2mm with a needle length of 0.2-3mm length depending on how deep you want to needle. Needles are made of either stainless steel or titanium and are one use per patient. Area to be treated would be derma rolled around 15 times and give 250 holes per cm squared. A derma roller would be used in large areas whereas the dermal pen would be more useful in smaller areas.

Electronic dermal pens are popular and easy to use especially for small areas like nasal-labial folds or finger webs.

Needle speed can be altered, the higher the speed the less discomfort. Multiple depths can be set using the derma pen whereas the derma roller is a fixed

depth. When keratinocytes function optimally the epidermis becomes thicker. Keratinocytes release KDAF and KD-CFF which suppress the inflammatory process. In hypertrophic scarring the epidermis is thinner than in normal tissue and using microneedling, it has demonstrated histologically that the epidermis becomes thicker. Melanocytes work in synergy with keratinocytes. Reduced keratinocyte function leads to higher inflammation so microneedling restores keratinocyte function and normalises cross talk with melanocytes. This can be useful in re-pigmentation of hypopigmented scars.

Microneedling can be used for cosmetic reasons as in anti-ageing or for medical reasons eg hypertrophic scarring, donor sites, surgical scars, varicella scars, vitiligo, acne scars, melasma and stretch marks. For rejuvenation purposes three to six treatments are recommended whereas for pigmentation four to six treatments are recommended. Typically, results are visible after the first treatment, but lasting and more significant results will be visible after three to six treatments. Skin condition can improve over 6 to 12 months.

Microneedling can also be used as a drug delivery system as the needles punch down to the dermis where certain drugs can be delivered, eg minoxidil in hair loss cases. This medical needling with drug delivery has shown promising results in restoration of hair. Treatment would be carried out every six weeks or so for approximately six treatments. Needle length of 0.5-1.5mm would be used.

### NEEDLE LENGTH

Needle length is important depending on what results needs to be achieved and what is being treated, eg 0.5 to 1.5 mm for acne and surgical scars.

- 1-3mm for hypertrophic scars
- 2.5mm to 3mm used in striae
- 0.75 to 3mm leads to bleeding and sets free the inflammatory process.

Microneedling will permit serum delivery to the dermis where it can have an optimal effect. A 0.75mm length of needle is the borderline between cosmetic and medical needling. Micro needling builds the epidermis by making it thicker whereas laser is ablative in nature.

### ADVANTAGES OF MICRONEEDLING

- Short procedure
- Mild post procedural effect, eg appears like mild sunburn
- Little or no down time
- Typically, three to six treatments at interval of six weeks between treatments
- Safe for all skin types from light to dark
- Other modalities can be used
- Single use kit for hygienic purposes - no cross contamination
- Can be used on face, neck and décolletage in antiageing and anywhere on body for scarring.

Pre microneedling should take place one hour before the treatment. A local numbing agent can be applied to the area making the procedure almost painless. The treated epidermis heals rapidly in a matter of hours. After the procedure, the treated skin has the appearance of moderate sunburn which improves over 24 to 48 hours. Make up can be worn the following day. There may be some visual difference in a few days, but it takes around six weeks to exhibit maximum result as new collagen is formed. Consent for photography for before and after photographs is worthwhile.

Prior to micro needling (around 30mins to 60mins) a local numbing agent can be applied to reduce any pain.

### CONTRAINDICATIONS

- Skin cancer
- Solar keratoses
- Skin infection
- Uncontrolled coagulation status

- Chemotherapy
- Keloid scarring - every pinprick could become a keloid.

### PRE-TREATMENT CARE FOR ANTIAGEING PURPOSES

- Two weeks of vitamin A and C orally prior to needling
- Vit A 0.5-1% skin solution topically for a few days prior to needling.

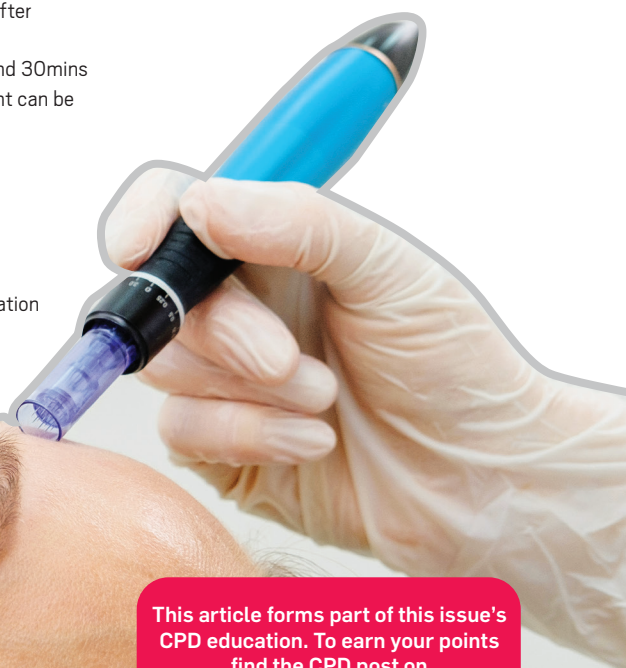
### Post-treatment care

- There should be absolutely no crusting of the skin. The skin should always be kept moist
- Clean skin with tea tree oil every three hours
- High dose of vitamin A oil twice a day
- Avoid direct sunlight
- No bandages to be used

Itchiness is common for a couple of days post treatment due to increased trans epidermal water loss (TEWL) from the puncture wounds but this settles fairly quickly. Patient consent is vital and the patient should be competent.

### CONCLUSION

Microneedling is a dermal tool in the practitioner's toolbox and is extremely versatile in its application demonstrating significant results with little or no side effects. **MC**



This article forms part of this issue's CPD education. To earn your points find the CPD post on [www.medicalacademic.co.za](http://www.medicalacademic.co.za)